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THE MAMMALS COLLECTED IN SAN MIGUEL ISLAND, PANAMA, BY W. W. BROWN, JR.

OUTRAM BANGS.

IN the spring of 1900 Mr. W. W. Brown, Jr., made a short collecting trip to San Miguel Island, the largest of the islands in the Bay of Panama, known as the Archipelago de las Perlas. Here he stayed for nearly a month,—middle of April to middle of May,—and in this time secured, he believes, representatives of all the species of land mammals that occur on the island, with the possible exception of some bats.

San Miguel Island is about fifteen miles in length and lies twenty miles distant from the nearest point on the mainland, and sixty miles from Panama. It is composed of low-lying hills clothed in heavy tropical forest, hot, damp, and unhealthy.

The collection of birds made on this trip has already been reported upon.¹ The birds of the island are for the most part like those of the adjacent mainland, and five species only were considered different enough to receive distinctive names. Most of the mammals, on the other hand, seem to be well differentiated island species. I am much indebted to Gerrit S. Miller, Jr., for identifying the bats for me, and to Dr. J. A. Allen for comparing the large opossum with the various forms he has lately described from different parts of northern South America.

One hundred and fifty-seven mammals, belonging to twelve species, were collected by Mr. Brown in San Miguel Island, as follows :

<i>Marmosa fulviventer</i> nob.	. . . . .	4 specimens
<i>Didelphis karkinophaga caucæ</i> Allen	. . . . .	2 “

¹ Bangs, Outram. Birds of San Miguel Island, Panama, *Auk*, vol. xviii (January, 1901), No. 1, pp. 24-32.

Bangs, Outram. A New Honey Creeper from San Miguel Island, Panama, *Proc. New Eng. Zool. Club*, vol. ii (Feb. 8, 1901), pp. 51, 52.

<i>Lepus incitatus</i> nob.	. . . . .	1 specimen
<i>Dasyprocta callida</i> nob.	. . . . .	6 specimens
<i>Loucheres labilis</i> nob.	. . . . .	19 "
<i>Proechimys burrus</i> nob.	. . . . .	51 "
<i>Zygodontomys seorsus</i> nob.	. . . . .	68 "
<i>Mus musculus</i> Linn.	. . . . .	1 specimen
<i>Mus rattus rattus</i> Linn.	. . . . .	1 "
<i>Mus rattus alexandrinus</i> (Geoff.)	. . . . .	1 "
<i>Vampyrops helleri</i> Peters	. . . . .	1 "
<i>Hemiderma brevicaudum</i> (Wied.)	. . . . .	1 "

Marmosa fulviventer sp. nov.

Four specimens, taken between April 28 and May 8.

Type: No. 8435, adult ♂, Bangs Collection, Museum of Comparative Zoölogy, collected April 28, 1900.

Characters: Nearest to the form of the *Marmosa murina* series from the Santa Marta region of Colombia, — *M. mitis* Bangs. Differing in being smaller; ear smaller; fur shorter, harsher, less silky; color, above more fulvous, less olivaceous, brown; under parts wholly fulvous, darkest on the sides (in *M. mitis* the under parts are yellowish-white); skull similar.

Color: The usual black facial markings, rest of upper parts between cinnamon and tawny-ochraceous; upper surface of arms, sides of neck, and sides, much brighter, more ochraceous-rufous; under parts strong buff, shading into ochraceous-buff on lower sides and on under surfaces of arms and legs, the fur unicolor except on lower sides, where it is pale gray basally; tail dusky, paler below than above; feet and hands dull grayish-white.

MEASUREMENTS.

NUMBER.	SEX.	TOTAL LENGTH.	TAIL VERTEBRÆ.	HIND FOOT.	EAR FROM NOTCH.
8435	♂ adult type	330	175	24	22
8436	♀ " topotype	325	180	23	22
8437	♀ " "	340	175	25	20
8438	♂ old adult topotype	head & body, 170		23	22

Skull, type, adult ♂, basal length, 34.4; occipito-nasal length, 37.4; zygomatic width, 20.4; least interorbital width, 6.2; length of nasals, 17.6; width of nasals, 5; length of palate, 18.8; upper tooth row, from front of canine to back of last molar, 15.2; length of single half of mandible, 27.8.

Didelphis karkinophaga caucæ Allen.

Two specimens, ♂ and ♀, were taken May 8. These have been compared by Dr. J. A. Allen with extensive material from South and Central America; and it is Dr. Allen's opinion that they are best referred to this form, though they do not represent it in its extremes.

*Lepus (Tapeti) incitatus*¹ sp. nov.

Type (and only specimen): No. 8441, old adult ♀, Bangs Collection, Museum of Comparative Zoölogy. Collected April 30, 1900.

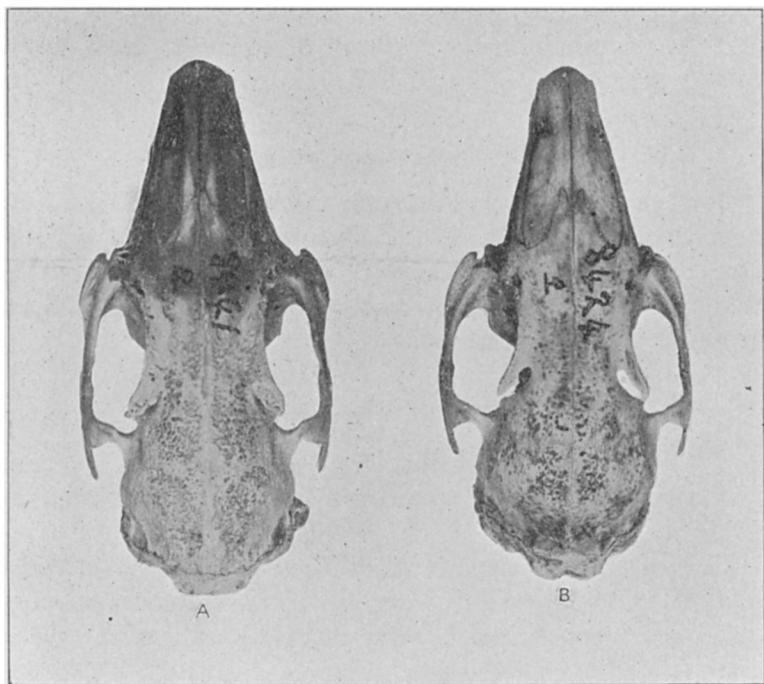
Characters: An island form of *Lepus gabbi* Allen. Distinguished by its larger size, paler, more reddish-brown coloring, and larger, heavier skull, with much heavier, more arched rostrum.

Color: Upper parts tawny-ferruginous; brightest on top of head, palest—shading to dull ochraceous—on sides; middle of back and top of head varied by the admixture of black-tipped hairs; nuchal patch, arms, and outer surface of legs clear, bright, tawny-ferruginous; superciliary stripe dull buffy-white; outer surface of ear colored like back, with short, dusky tip and narrow, yellowish-white outer border, inside of ear very sparsely haired—the hairs colorless; under parts soiled white, except underside of neck, which is Isabella-color, shading into dull, tawny-ferruginous on sides of neck.

Skull: Compared with skulls of true *L. gabbi* from Panama and Chiriqui, the skull of *L. incitatus* is larger and heavier throughout; rostrum much wider and heavier, and more rounded and arched; bony palate wider and longer; molar and incisor teeth heavier.

¹ *Incitatus*: swiftly running; rapid, quick.

Measurements: Type, old adult ♀, total length, 420 ; tail vertebræ, 20 ; hind foot (with claw), 80 ; ear from notch, 45.¹



A. Type of *Lepus incitatus*, adult ♀.

B. *Lepus gabbi* from Loma del Leon, Panama, adult ♀.

Skull, type, old adult ♀, basal length, 57 ; occipito-nasal length, 74.6 ; zygomatic width, 35.4 ; mastoid width, 23.8 ; least interorbital width, 16.2 ; length of nasals, 30.4 ; width of nasals, 13 ; length of palatal bridge (from incisive foramina to

¹ Specimens of true *L. gabbi* taken by Mr. Brown at Loma del Leon, Panama, and Divala, Chiriqui, measured as follows :

NUMBER.	SEX.	LOCALITY.	TOTAL LENGTH.	TAIL VERTEBRÆ.	HIND FOOT (CLAW).	EAR FROM NOTCH.
8424	♀	Loma del Leon	340	18	78	38
8425	♀	"	345	20	75	45
10065	♂	Divala	370	20	77	47
10066	♀	"	355	15	75	48
10067	♀	"	370	18	78	50

palatal notch), 9; length of incisive foramina, 17; width of incisive foramina, 6.4; upper tooth row, alveola, 14.6; length of single half of mandible, 56; lower tooth row, alveola, 15.4.

Remarks. — The hare was not at all common in San Miguel Island, and Mr. Brown saw but one other during his stay. Mr. Brown tells me that *Lepus gabbi* and *L. incitatus* are extraordinarily swift of foot and are seldom seen except for an instant as they dart like a flash through the undergrowth.

The form found in San Miguel Island differs from true *Lepus gabbi* of the Isthmus in its larger size and heavier, slightly different skull. The color is also slightly different, the island race being less marked along the back with black-tipped hairs, and the general coloring is decidedly redder.

*Dasyprocta callida*¹ sp. nov.

Six specimens, April and May.

Type: No. 8443, adult ♂, Bangs Collection, Museum of Comparative Zoölogy. Collected May 8, 1900.

Characters: A well-marked island species of the *variegata-isthmica* group. Color pale yellowish; rump hairs black, with white tips. Skull very slender, with long, light rostrum and narrow nasals. Molar-form teeth small.

From *D. isthmica*, the new species can be told by its white-tipped rump hairs (yellow-tipped in *isthmica*), and from *D. colombiana* (the form of this group inhabiting the Santa Marta region of Colombia), which also has white-tipped rump hairs, by much paler and more yellowish coloration. From either it is easily known by its very different skull (see figure on next page).

From the Central American *D. punctata*, *D. callida* and its allies differ chiefly in the character of the hairs of the rump. In *D. punctata* these are not so elongated and are annulated and colored like the hairs of the rest of the upper parts.

Color: Hairs of upper parts annulated with yellowish and black, giving a slightly variegated look, though the yellowish much predominates, and the general color is yellowish clay-color, brighter, more ochraceous in middle of back anterior to

¹ *Callidus*: that is, taught wisdom by experience; shrewd, cunning.

rump ; rump hairs elongate, black with white tips ; under parts soiled white, the hairs annulated with drab ; feet and hands brownish-black.

The type and No. 8447 are in fresh pelage and are similar. No. 8445, adult ♂, is rather darker and more nearly approaches *D. colombiana* in color. The three other specimens, of which



A



B

- A. *Dasyprocta isthmica* from Divala, Chiriqui, adult ♀.
B. Type of *Dasyprocta callida*, adult ♂.

two are nursing females, are in worn, shabby pelage, in which the black of the rump has faded to dull brown and the white tips of the hairs are worn down and discolored. In No. 8446, new, normally colored rump hairs are growing in again among the old faded ones.

Skull: The skull of *D. callida* is very distinctive, and can at once be told from that of any of its allies by its slenderness, its long, narrow rostrum and long, narrow nasals. The molar-form teeth are very small.

MEASUREMENTS.

NUMBER.	SEX.	DATE.	TOTAL LENGTH.	TAIL VERTEBRÆ.	HIND FOOT.	EAR FROM NOTCH.
8443, type	♂ adult	May 8	480	25	102	38
8444, topotype	♀ "	April 22	460	22	100	38
8445, "	♂ "	" 21	465	22	102	37
8446, "	♀ "	" 21	510	30	105	38
8442, "	♀ "	" 26	485	20	97	35
8447, "	♂ youngish	" 25	420	20	96	33

NOTE. — All external measurements are the collector's. Hind foot is measured with the claw.

Skull, basal length, 85.4 ; occipito-nasal length, 98.6 ; zygomatic width, 44 ; mastoid width, 32 ; least interorbital width, 26.2 ; length of nasals, 38 ; width of nasals, 15.4 ; length of palate, to palatal notch, 39 ; to end of pterygoid, 55.4 ; upper tooth row (with four molar-form teeth in place), 17.2 ; greatest width of rostrum, 24 ; length of single half of mandible, 58 ; lower tooth row (with four molar-form teeth in place), 18.8.

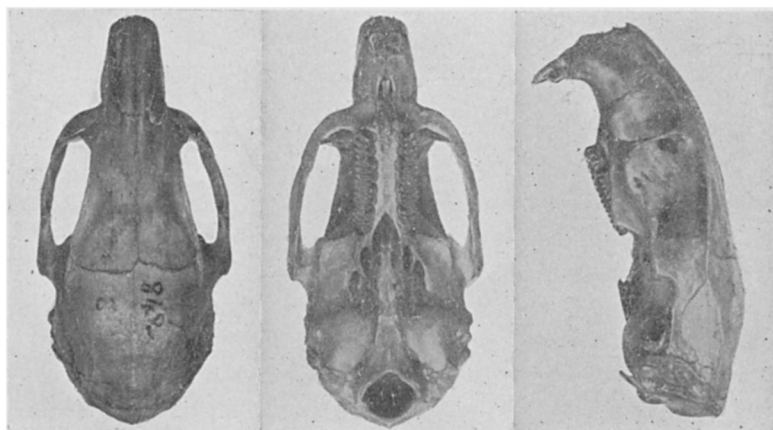
Remarks. — The six specimens were all shot by Mr. Brown among mangroves, the leaves of which they are very fond of. The animal is much hunted by the negro pearl divers, and is exceedingly shy and wary, and for some time Mr. Brown was unable to secure one. One day during a storm he noticed that when a mangrove blew over it was at once stripped of its leaves by the agoutis. Acting upon a plan that this habit of the animal suggested to him, he took several large stones with him, and concealed himself in a tree. After a little he sent a stone crashing through the mangroves and presently saw an agouti cautiously approach the spot, thinking a mangrove had fallen over. The first day he shot two specimens in this way, and afterwards four more.

Loncheres labilis¹ sp. nov.

Nineteen specimens, April and May.

Type: No. 8480, old adult ♂, Bangs Collection, Museum of Comparative Zoölogy. Collected April 26, 1900.

Characters: Most nearly related to *L. caniceps* Günther of Medellin, Colombia. Pelage long and stiff, but *without spines*. Judged by description alone, the new species is brighter and redder in color and its head is not gray. The skull compared with Günther's figures (*P. Z. S.*, 1876, p. 746) is more slender, the palate and post-palatal regions are narrower, and in profile the skull of the island animal is much flatter, the supraorbital ridge not rising in a curve but lying flat and straight.



Type of *Loncheres labilis*, adult ♂ (three views).

Color and Pelage: Pelage moderately long and harsh, but *wholly without spines*. Whiskers very long, black, as also a patch of whisker-like hairs behind the eye and others in front of and on edge of ear. Top of head, nose, and cheeks black, the hairs somewhat annulated with yellowish, giving a pepper-and-salt appearance; yellowish-white patches at base of whiskers, above eye, and behind ear; rest of upper parts bright ferruginous, varied by black-tipped hairs along middle of back, varying in amount in different individuals, — some specimens

¹ *Labilis*, gliding, slipping.

being wholly of an intense ferruginous color from nape to tail, others having the rump only ferruginous, the rest of back being darkened by a copious sprinkling of black-tipped hairs; chin dull grayish-white; rest of under parts varying from strong buff to clear ferruginous, some examples having both colors irregularly distributed in patches; upper surfaces of hands and feet yellowish-brown; nails white; tail colored like the body for a short distance, then black, sometimes yellowish-white at tip, thickly clothed with stiff hairs, which, however, do not hide the scales (except at base, where the tail is colored like the body); ears blackish, small and low, nearly naked except for the long black whisker-like hairs that surmount their edges.

Skull: Compared with the figures of that of *L. caniceps*, the skull of *L. labilis* is much more slender, with narrower palatal and post-palatal regions; viewed in profile it is much flatter, with the supraorbital ridge lying flat and straight and not rising in a curve.

MEASUREMENTS.

NUMBER.	SEX.	DATE.	TOTAL LENGTH.	TAIL VERTEBRÆ.	HIND FOOT.	EAR FROM NOTCH.
8480, type	♂ adult	April 26	540	240	47	15
8468, topotype	♂ "	" 26	540	220	48	15
8471, "	♂ "	" 26	540	220	47	15
8470, "	♂ "	" 26	535	260	48	16
8469, "	♂ "	" 26	530	210	48	15
8473, "	♂ "	" 21	500	240	45	15
8474, "	♂ "	" 23	470	220	47	15
8472, "	♂ "	" 26	470	230	45	16
8475, "	♂ young	" 24	440	215	45	14
8477, "	♂ "	May 4	420	175	42	15
8476, "	♂ "	" 5	420	195	42	14

Skull, type, adult ♂, basal length, 47.8; occipito-nasal length, 56.6; zygomatic width, 27.4; mastoid width, 22.4; least inter-orbital width, 12; length of nasals, 16; width of nasals, 7.2; length of palate, to palatal notch, 21.2; to end of pterygoid, 36.4; upper tooth row, 13; length of single half of mandible, 34; lower tooth row, 13.2.¹

¹ Some skulls that appear to be of about the same age are smaller, others larger.

Remarks.—This island species of *Loncheres* belongs to a group quite different from either true *Loncheres* or *Isotrix*. The skull is, in important characters, similar to that of true *Loncheres*, but the pelage is very different in wholly lacking spines. *Isotrix* has still softer pelage and more hairy tail, and also a different skull. I hope some mammalogist, with more material at his command than I now have, will before long readjust and properly divide the different groups of this series of “spiny rats.”

Loncheres labilis was abundant in San Miguel Island, but was wholly arboreal, Mr. Brown catching all his specimens in traps set on the branches of large trees. It appears to be diurnal, and on one or two occasions Mr. Brown saw the animal proceeding along the branches with a curious gliding gait, his account suggesting the name I have used for the species. It is the “Raton Marenero” of the islanders.

*Proechimys burrus*¹ sp. nov.

Fifty-one specimens, April and May.

Type: No. 8458, adult ♂, Bangs Collection, Museum of Comparative Zoölogy. Collected April 30, 1900.

Characters: A large, bright-colored, insular form of the *Proechimys centralis* series. Differing from its nearest mainland ally, *P. centralis panamensis* Thomas, by its larger size and richer red color.

From *P. centralis chiriquinus* Thomas it differs in less spiny back and redder colors. In color it is nearest to *P. centralis centralis* (Thomas), but its feet are much darker.

The skull is slightly different from that of any of the other subspecies. The rostrum is heavier, even, than in *chiriquinus*. The nasals are long, broad, and bluntly truncate posteriorly. (In *centralis* and *panamensis* the nasals are pointed posteriorly, and in *chiriquinus* they are shorter and less bluntly truncate.) Hamular process broad and spatulate, as in the other subspecies. Palatal foramina shorter than in *chiriquinus*, and less parallel-sided and wider open than in *centralis* and *panamensis*.

¹ *Burru*s, red, rufous.

Color and Pelage: Spines confined to anterior two-thirds of back (as in all members of this group of the genus); spines not particularly numerous (as is the case in *chiriquinus*), but well covered by the hair; whole upper parts rich, deep, ferruginous, slightly varied along back by the brownish-black tips of the spines showing through the hair; top of nose, cheeks, and lower sides a little paler, more yellowish; under parts pure white, except anal region and base of tail, which are colored like the back; hands and feet dusky brown, in some specimens slightly grayer along inner edge of metatarsus; tail bicolored, black above, grayish below, well clothed with short, stiff hairs; ears dusky, nearly naked.

Type of *Proechimys burrus*, adult ♂.

Young examples, half grown, are much darker, less reddish above; but among the adults there is little variation in color.

MEASUREMENTS.

NUMBER.	SEX.	DATE.	TOTAL LENGTH.	TAIL VERTEBRÆ.	HIND FOOT.	EAR FROM NOTCH.
8458, type	♂ adult	April 30	470	185	58	22
8448, topotype	♂ "	" 21	490	205	60	22
8455, "	♂ "	" 23	470	165	54	22
8449, "	♂ "	" 24	470	165	58	21
8451, "	♂ "	" 22	460	180	58	21
8450, "	♂ "	" 27	440	160	58	22
8459, "	♀ "	" 21	425	150	52	20
8454, "	♂ "	" 21	438	165	52	22
8456, "	♀ "	" 24	410	145	50	20
8460, "	♂ "	May 5	400	140	52	20

Skull, type, adult ♂, basal length, 52; occipito-nasal length, 61.2; zygomatic width, 29; mastoid width, 22.2; least inter-orbital width, 13.4; length of nasals, 24.2; width of nasals,

7.6; length of palate to palatal notch, 21; to end of pterygoid, 34; length of palatal foramina, 5.2; width of palatal foramina, 3; upper tooth row, 9.8; length of single half of mandible, 33.8; lower tooth row, 10.2.

Remarks.—The San Miguel spiny rat is a slightly differentiated island form of the *centralis* series. It was very common in the island, and Mr. Brown easily took as many specimens as he wanted. It is known to the islanders as “Raton mockungay.” They, however, believe the tailless individuals are a different animal. About one-third of the specimens taken were tailless. The animal was generally distributed throughout the island, and was often found living in the huts and sheds of the negroes, like the common rat.

Mr. Brown took *P. panamensis* at Loma del Leon, Panama, and *P. chiriquinus* at Divala, Chiriqui.

*Zygodontomys seorsus*¹ sp. nov.

Sixty-eight specimens, April and May.

Type: No. 8490, old adult ♂, Bangs Collection, Museum of Comparative Zoölogy. Collected May 5, 1900.

Characters: Similar in color and general appearance to *Z. brevicauda* (Allen and Chapman) of Trinidad, but much larger, hind foot much bigger, tail less distinctly bicolored and more coarsely scaly. Skull larger, rougher, supraorbital heading heavier, transverse ridge where squamosal and supraoccipital meet more pronounced, forward end of zygoma and zygomatic plate standing farther out from skull.

From *Z. brunneus* Thomas, *Z. seorsus* differs by its larger size, larger foot, and richer, more reddish coloration.

Color and Pelage: Upper parts russet-brown, shaded with dull ferruginous, the latter color more intense on the rump; whole dorsal region thickly set with brownish-black-tipped hairs; sides paler, more yellowish; under parts dull buffy-gray, strongly shaded with dull ferruginous in anal region; line of demarcation between colors of upper and under parts indistinct; upper surfaces of hands and feet yellowish-brown;

¹ *Seorsus*, isolated, living apart.

soles naked ; ears sparsely haired, dusky ; tail very sparsely haired, coarsely scaly, indistinctly bicolored, blackish, rather paler towards base below.

Young examples are rather darker, less reddish, brown above, and the upper surfaces of feet and hands darker brown, less yellowish.

The adults vary but little in color ; some specimens are yellower above and others more strongly ferruginous.

MEASUREMENTS.

NUMBER.	SEX.	DATE.	TOTAL LENGTH.	TAIL VERTEBRÆ.	HIND FOOT.	EAR FROM NOTCH.
8490, type	♂ adult	May 5	320	140	34	18
8485, topotype	♂ "	" 4	315	140	34	17
8492, "	♀ "	April 23	310	130	32	17
8495, "	♂ "	" 25	305	125	33	17
8487, "	♂ "	May 2	300	120	30	17
8486, "	♂ "	April 25	295	125	32	17
8496, "	♂ "	May 6	295	120	32	17
8497, "	♀ "	" 8	290	125	31	16
8483, "	♀ "	April 30	290	125	30	18
8484, "	♂ "	" 21	290	118	30	18
8489, "	♂ "	May 5	285	120	30	15
8488, "	♂ "	" 3	285	120	30	16
8481, "	♀ "	April 26	285	110	30	16
8491, "	♂ "	" 25	280	120	30	17
8493, "	♂ "	" 22	275	110	30	17

Skull, type, old adult ♂, basal length, 32.8 ; occipito-nasal length, 35.2 ; zygomatic width, 18.4 ; mastoid width, 12.8 ; length of nasals, 15 ; width of nasals, 4.4 ; least interorbital width, 5.4 ; width across zygomatic plates, 11.2 ; length of incisive foramina, 7.4 ; width of incisive foramina, 3.2 ; length of palate, to palatal notch, 16 ; to end of pterygoid, 22 ; upper tooth row, 52 ; length of single half of mandible, 21 ; lower tooth row, 5.2.

Remarks. — The San Miguel vesper rat is a strongly marked island species, most nearly related to *Z. brevicauda*, of Trinidad, which it precisely resembles in color and character of pelage. Its much greater size, bigger foot, and different tail distinguish

it, externally, from the Trinidad species, and the skulls of the two can easily be distinguished.

Z. seorsus was an abundant animal in San Miguel Island, inhabiting the dense, swampy woods, and Mr. Brown found no difficulty in trapping it in numbers.

That the vesper rat of San Miguel Island should be so like the Trinidad species is interesting, especially so as the yellow honey creeper of the island (*Cæreba cerinoclunis* Bangs) is much more nearly related to *C. luteola* of Venezuela, Trinidad, and northeastern Colombia than to *C. mexicana* of the neighboring coasts of Panama and Colombia.

Mus musculus Linn.

One adult ♂, taken April 20, 1900.

Mus rattus rattus Linn.

One adult ♂, taken April 20, 1900.

Mus rattus alexandrinus (Geoff.).

One adult ♂, taken April 23, 1900.

The three introduced species of *Mus* could not have been very numerous in San Miguel, as one individual of each was all that fell into Mr. Brown's traps in over three weeks of collecting.

Vampyrops helleri Peters.

One adult ♀, taken April 25, 1900.

Mr. Gerrit S. Miller, Jr., tells me that this is the only example of this rare bat that he has seen, but the specimen agrees so perfectly with the description that he has little doubt of its being true *V. helleri*.

Hemiderma brevicaudum (Wied.).

One adult ♂, taken April 25.